Flight Areas for an Aerial Radiological Survey of Abandoned Uranium Mines of the Navajo Nation

Data format: Shapefile

File or table name: NN_Flight_Areas

Coordinate system: Geographic

Theme keywords: Flight Areas, Aerial Radiological Surveys, Gamma Radiation

Abstract: This polygon shapefile documents the extent of the aerial radiological surveys of 41 potential uranium mining areas (1,144 square miles) within the Navajo Nation that were conducted during the period from October 1994 through October 1999. The US Environmental Protection Agency (USEPA) Region 9 funded the surveys and the US Department of Energy (USDOE) Remote Sensing Laboratory (RSL) in Las Vegas, Nevada conducted the aerial surveys. The aerial survey data were used to characterize the overall radioactivity and excess Bismuth 214 levels within the surveyed areas. Bismuth 214 is an indicator of uranium ore deposits and/or uranium mines. Fourteen attributes about each survey are included.

FGDC and ESRI Metadata:

Metadata elements shown with blue text are defined in the Federal Geographic Data Committee's (FGDC) *Content Standard for Digital Geospatial Metadata (CSDGM)*. Elements shown with green text are defined in the *ESRI Profile of the CSDGM*. Elements shown with a green asterisk (*) will be automatically updated by ArcCatalog. ArcCatalog adds hints indicating which FGDC elements are mandatory; these are shown with gray text.

Identification Information:

Citation:

Citation information:

Originators: Thane Hendricks, Bechtel Nevada, USDOE Remote Sensing Laboratory

Title:

Flight Areas for an Aerial Radiological Survey of Abandoned Uranium Mines of the Navajo Nation

***File or table name:** NN_Flight_Areas

Publication date: August 2001
Publication time: Unknown
***Geospatial data presentation form:** vector digital data

Publication information:
Publication place: Las Vegas, NV
Publisher: U.S. Department of Energy

Other citation details:
For a detailed description of this survey of the Navajo Nation, see the DOE report: "DOE/NV11718--602" Skey for this document is S03310309.

***Online linkage:**
\\Terra_dc\Navajo\NAUM_NN_Summary\DB\Radiation\NN_Flight_Areas.shp

Description:

Abstract:
This polygon shapefile documents the extent of the aerial radiological surveys of 41 potential uranium mining areas (1,144 square miles) within the Navajo Nation that were conducted during the period from October 1994 through October 1999. The US Environmental Protection Agency (USEPA) Region 9 funded the surveys and the US Department of Energy (USDOE) Remote Sensing Laboratory (RSL) in Las Vegas, Nevada conducted the aerial surveys. The aerial survey data were used to characterize the overall radioactivity and excess Bismuth 214 levels within the surveyed areas. Bismuth 214 is an indicator of uranium ore deposits and/or uranium mines. Fourteen attributes about each survey are included.

Purpose:
This dataset was developed to support the U.S. Environmental Protection Agency (USEPA) in its undertaking of an extensive scientific study to determine if abandoned uranium mines (AUM) and related mine features pose a significant risk to human health and the environment, and to identify areas requiring action to reduce risk for the Navajo Nation.

Identifying current radiation source areas was useful for designing field sampling plans for water and home surveys.

Supplemental information:
See the file //DB/Radiation/NAUM_Radsurveys.XLS for the source of Flight Area Attributes.

***Language of dataset:** en

Time period of content:

Time period information:

Range of dates/times:
Beginning date: October, 1994
Beginning time: unknown
Ending date: October, 1999
Ending time: unknown

Currentness reference:
ground condition

Status:
Progress: Complete

Maintenance and update frequency: None planned

Spatial domain:

Bounding coordinates:

* **West bounding coordinate:** -111.780543
* **East bounding coordinate:** -108.972132
* **North bounding coordinate:** 37.160006
* **South bounding coordinate:** 35.007696

Local bounding coordinates:

* **Left bounding coordinate:** -111.780543
* **Right bounding coordinate:** -108.972132
* **Top bounding coordinate:** 37.160006
* **Bottom bounding coordinate:** 35.007696

Keywords:

Theme:

Theme keywords: Flight Areas, Aerial Radiological Surveys, Gamma Radiation
Theme keyword thesaurus: None

Place:

Place keywords: Navajo Nation, Arizona, New Mexico, Utah, United States
Place keyword thesaurus: None

Access constraints: None

Use constraints:

1144 square miles of the more than 25,000 square mile Navajo Nation were surveyed. This area does not include all areas that may have had uranium mining. Specifically, these surveys do not include the Grants Uranium District that is partially on the Eastern Agency of the Navajo Nation.

Use of this data generally requires computer workstations with ESRI's Arc/Info (8.x or above), ArcGIS (8.x or above), or ArcView (3.x), or some other GIS or CAD software that is capable of reading or converting this dataset.

The data are provided "as-is," without warranty of any kind, either express or implied.

These data have been compiled as part of a desktop project to collect existing spatial data to support the study of Navajo abandoned uranium mines. No field verifications were undertaken as part of this desktop study.

Point of contact:

Contact information:

Contact organization primary:

Contact organization: U. S. Environmental Protection Agency, Region 9, Superfund Program

Contact address:

Address type: mailing and physical address
Address:
75 Hawthorne St (SFD 8-2)
City: San Francisco
State or province: CA
Postal code: 94105
Country: USA

Contact voice telephone: 415-972-3167

Security information:
Security classification system: None

***Native dataset format:** Shapefile
***Native data set environment:**
Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI ArcCatalog 9.1.0.780

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Data Quality Information:

Attribute accuracy:
Attribute accuracy report:
Attribute data are from the source data.

Logical consistency report:
This polygon shapefile has been visually inspected for extent and number of polygons and accuracy of attribute data. Two polygons, Red Valley and Red Valley South flight areas, within the Four Corners region are overlapping.

Completeness report:
1144 square miles of the more than 25,000 square mile Navajo Nation were surveyed. This area does not include all areas that may have had uranium mining. Specifically, these surveys do not include the Grants Uranium District that is partially on the Eastern Agency of the Navajo Nation.

Positional accuracy:
Horizontal positional accuracy:
Horizontal positional accuracy report:
Aircraft position was established using a Real-time Differential Global Positioning Sustem (RDGPS) and a radar altimeter. The transmitted correction received by the helicopter's GPS unit minimized the relative positional uncertainty to +/- 15 feet (5 meters).

Lineage:
Process step:
Process description:
This polygon shapefile was derived from a series of shapefiles of flight areas by region for the Navajo Nation. These shapefiles were merged into one shapefile and projected to Geographic Coordinates, NAD83. The attribute, REGION, was added to document the region that each flight area is a part.

Process software and version: ESRI ArcGIS 8.3
Process date: June 2005

Process contact:
Contact information:
Contact organization primary:
Contact organization: TerraSpectra Geomatics

Contact address:
Address type: mailing and physical address

Address:
2700 E Sunset Rd, Ste A-10
City: Las Vegas
State or province: NV
Postal code: 89120
Country: USA

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Spatial Data Organization Information:

*__Direct spatial reference method:__ Vector

__Point and vector object information:__
__SDTS terms description:__
*__Name:__ NN_Flight_Areas
*__SDTS point and vector object type:__ G-polygon
*__Point and vector object count:__ 41

__ESRI terms description:__
*__Name:__ NN_Flight_Areas
*__ESRI feature type:__ Simple
*__ESRI feature geometry:__ Polygon
*__ESRI topology:__ FALSE
*__ESRI feature count:__ 41
*__Spatial index:__ FALSE
*__Linear referencing:__ FALSE

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Spatial Reference Information:

__Horizontal coordinate system definition:__
__Coordinate system name:__
*__Geographic coordinate system name:__ GCS_North_American_1983

__Geographic:__
*__Latitude resolution:__ 0.000000
*__Longitude resolution:__ 0.000000
*__Geographic coordinate units:__ Decimal degrees

__Geodetic model:__
*__Horizontal datum name:__ North American Datum of 1983
*__Ellipsoid name:__ Geodetic Reference System 80
*__Semi-major axis:__ 6378137.000000
*__Denominator of flattening ratio:__ 298.257222

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Entity and Attribute Information:

Detailed description:

*__Name:__ NN_Flight_Areas

Entity type:

*__Entity type label:__ NN_Flight_Areas

*__Entity type type:__ Feature Class

*__Entity type count:__ 41

Entity type definition:

Flight Areas for an Aerial Radiological Survey of Abandoned Uranium Mines in the Navajo Nation

Attribute:

*__Attribute label:__ FID

*__Attribute alias:__ FID

*__Attribute definition:__

Internal feature number.

*__Attribute definition source:__

ESRI

*__Attribute type:__ OID

*__Attribute width:__ 4

*__Attribute precision:__ 0

*__Attribute scale:__ 0

Attribute domain values:

*__Unrepresentable domain:__

Sequential unique whole numbers that are automatically generated.

Attribute:

*__Attribute label:__ Spacing

*__Attribute alias:__ Spacing

Attribute definition:

Survey line spacing in feet

*__Attribute type:__ Number

*__Attribute width:__ 4

Attribute:

*__Attribute label:__ AREA

*__Attribute alias:__ AREA

*__Attribute type:__ Number

*__Attribute width:__ 19

*__Attribute number of decimals:__ 11

Attribute:

*__Attribute label:__ Shape

*__Attribute alias:__ Shape

*__Attribute definition:__

Feature geometry.

*__Attribute definition source:__

ESRI

*__Attribute type:__ Number

*__Attribute width:__ 19

*__Attribute number of decimals:__ 11

Attribute domain values:
*__Unrepresentable domain:__
Coordinates defining the features.

Attribute:
*__Attribute label:__ Area
*__Attribute alias:__ Area
Attribute definition:
Area of the flight area in square meters

*__Attribute type:__ String
*__Attribute width:__ 25

Attribute:
*__Attribute label:__ Perimeter
*__Attribute alias:__ Perimeter
Attribute definition:
Perimeter of the flight area in meters

*__Attribute type:__ String
*__Attribute width:__ 20

Attribute:
*__Attribute label:__ Name
*__Attribute alias:__ Name
Attribute definition:
flight area name

*__Attribute type:__ Date
*__Attribute width:__ 8

Attribute:
*__Attribute label:__ Region
*__Attribute alias:__ Region
Attribute definition:
Name of the region to which the flight area belongs.

*__Attribute type:__ Date
*__Attribute width:__ 8

Attribute:
*__Attribute label:__ Surv_Start
*__Attribute alias:__ Surv_Start
Attribute definition:
Survey Start Date

*__Attribute type:__ Number
*__Attribute width:__ 10
*__Attribute number of decimals:__ 2

Attribute:
*__Attribute label:__ Surv_End
*__Attribute alias:__ Surv_End
Attribute definition:
Survey End Date

*Attribute type: Number
*Attribute width: 10
*Attribute number of decimals: 2

Attribute:
*Attribute label: TER_avg
*Attribute alias: TER_avg
Attribute definition:
Terrestrial Exposure Rate in µR/hr (Average)

*Attribute type: Number
*Attribute width: 10
*Attribute number of decimals: 2

Attribute:
*Attribute label: TER_dev
*Attribute alias: TER_dev
Attribute definition:
Terrestrial Exposure Rate in µR/hr (Deviation)

*Attribute type: Number
*Attribute width: 10
*Attribute number of decimals: 2

Attribute:
*Attribute label: TER_min
*Attribute alias: TER_min
Attribute definition:
Terrestrial Exposure Rate in µR/hr (Minimum)

*Attribute type: Number
*Attribute width: 9

Attribute:
*Attribute label: TER_max
*Attribute alias: TER_max
Attribute definition:
Terrestrial Exposure Rate in µR/hr (Maximum)

*Attribute type: Number
*Attribute width: 9

Attribute:
*Attribute label: No_Samples
*Attribute alias: No_Samples
Attribute definition:
Total Number of Survey Samples

*Attribute type: Number
*Attribute width: 19
*Attribute number of decimals: 1

Attribute:
*Attribute label: Excess_Sam
*Attribute alias: Excess_Sam

Attribute definition:
Number of Samples of Excess Bismuth Greater than 80 Counts per Second

***Attribute type:** String
***Attribute width:** 20

Attribute:
***Attribute label:** ExcessAcre
***Attribute alias:** ExcessAcre
Attribute definition:
Acres of Excess Bismuth Greater than 80 Counts per Second

***Attribute type:** String
***Attribute width:** 10

Attribute:
***Attribute label:** Platform
***Attribute alias:** Platform
Attribute definition:
Helicopter platform

***Attribute type:** Number
***Attribute width:** 4

Attribute:
***Attribute label:** Detectors
***Attribute alias:** Detectors
Attribute definition:
Gamma Detector configuration

***Attribute type:** String
***Attribute width:** 10

Attribute:
***Attribute label:** PERIMETER
***Attribute alias:** PERIMETER

***Attribute type:** Double
***Attribute width:** 19
***Attribute precision:** 18
***Attribute scale:** 11

Overview description:
Dataset overview:
There are 41 polygons representing the flight areas for an aerial radiological survey of abandoned uranium mines in the Navajo Nation. Two polygons, Red Valley and Red Valley South flight areas, within the Four Corners region are overlapping.

Entity and attribute overview:
Area is in suqare meters.

Perimeter is in meters.

There are fourteen thematic attributes:

Name - this field provides the name of the flight area

Region - this field provides the name of the region to which the flight area belongs.

Surv_Start - Survey Start, date the individual survey area began

Surv_End - Survey End, date the individual survey area was completed

TER_avg - Terrestrial Exposure Rate in µR/hr (Average), average exposure rate for the individual survey area

TER_dev - Terrestrial Exposure Rate in µR/hr (Deviation), standard deviation of the average exposure rate for the individual survey area

TER_min - Terrestrial Exposure Rate in µR/hr (Minimum), minimum exposure rate for the individual survey area

TER_max - Terrestrial Exposure Rate in µR/hr (Maximum), maximum exposure rate for the individual survey area

No_Samples - Total Number of Survey Samples, total number of 1-second aerial sampled points for which full gamma spectral data were acquired for the individual survey area

Excess_Sam - Number of Samples of Excess Bismuth Greater than 80 Counts per Second (cps), approximately 3.4 µR/hr, total number of 1-second bismuth-extracted values which exceeded the Minimum Reportable Activity (MRA) level for the individual survey area

ExcessAcre - Acres of Excess Bismuth Greater than 80 Counts per Second (cps), approximately 3.4 µR/hr, total number of acres which had bismuth-extracted values which exceeded the Minimum Reportable Activity (MRA) level for the individual survey area

Platform - Helicopter used for the individual survey

Detectors - Gamma detector configuration of two types:
12(2x4x16) - twelve 2" x 4" x 16" Na (Tl) gamma detectors
8(2x4x16) - eight 2" x 4" x 16" Na (Tl) gamma detectors

Spacing - Survey line spacing in feet

For additional information contact:

Remote Sensing Laboratory
Operated by Bechtel Nevada
for the US Department of Energy.

Mailing Address:
U.S. Department of Energy
National Nuclear Security Administration
Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518

Street Address:

232 Energy Way
North Las Vegas, NV 89030

Phone:
702-295-3521

Entity and attribute detail citation:
See the file //DB/Radiation/NAUM_Radsurveys.XLS for the source of Flight Area Attributes.

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Distribution Information:

Distributor:
Contact information:
Contact organization primary:
Contact organization: U. S. Environmental Protection Agency, Region 9, Superfund Records Center

Contact address:
Address type: mailing address
Address:
95 Hawthorne St (SFD-7C)
City: San Francisco
State or province: CA
Postal code: 94105
Country: USA

Contact voice telephone: 415-536-2033

Resource description: Downloadable Data

Distribution liability:
Although these data have been processed successfully on a computer system for the USEPA, no warranty expressed or implied is made by the USEPA or its contractors regarding the utility of the data on any other system, nor shall the act of distribution constitute any such warranty. No responsibility is assumed by USEPA or its contractors in the use of these data.

Standard order process:
Digital form:
Digital transfer information:
***Transfer size:** 0.126
***Dataset size:** 0.126

Custom order process:
Contact the USEPA for a custom order.
Technical prerequisites:
Use of this data generally requires computer workstations with ESRI's Arc/Info (8.x or above), ArcGIS (8.x or above), or ArcView (3.x), or some other GIS or CAD software that is capable of reading or converting this dataset.

Available time period:
Time period information:

Single date/time:

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Metadata Reference Information:

*__Metadata date:__ 20070807

*__Language of metadata:__ en

__Metadata contact:__
__Contact information:__
__Contact person primary:__
__Contact person:__ Andrew Bain
__Contact organization:__ U. S. Environmental Protection Agency, Region 9, Superfund Program
__Contact position:__ Project Manager

__Contact address:__
__Address type:__ mailing and physical address
__Address:__
75 Hawthorne St (SFD 8-2)
__City:__ San Francisco
__State or province:__ CA
__Postal code:__ 94105
__Country:__ USA

__Contact voice telephone:__ 415-972-3167

*__Metadata standard name:__ FGDC Content Standards for Digital Geospatial Metadata
*__Metadata standard version:__ FGDC-STD-001-1998
*__Metadata time convention:__ local time

__Metadata access constraints:__ None.
__Metadata use constraints:__
None.

__Metadata security information:__
__Metadata security classification system:__ None

__Metadata extensions:__
*__Online linkage:__ http://www.esri.com/metadata/esriprof80.html
*__Profile name:__ ESRI Metadata Profile

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Binary Enclosures:

__Thumbnail:__
__Enclosure type:__ Picture

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